

## **MODULE V - LANDFILL #5 POST-CLOSURE CARE**

### **V.A. APPLICABILITY**

- V.A.1. The requirements of this permit module pertain to Landfill #5, as described in Attachment 12. This landfill is closed and any further disposal of hazardous waste in the landfill is prohibited.

### **V.B. GENERAL POST-CLOSURE CARE CONDITIONS**

- V.B.1. The Permittee shall conduct all post-closure care activities in accordance with this permit, in compliance with UAC R315-8-7.
- V.B.2. The Permittee shall maintain and monitor the landfill for a period of 30 years from the date of closure permit issuance, 15 July 1986, to the extent necessary to protect human health and the environment.
- V.B.3. The Permittee shall maintain the integrity and effectiveness of the final cover in compliance with UAC R315-8-14.5 and Attachment 13, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion from wind or precipitation, burrowing rodents, or other events which might compromise its integrity.
- V.B.4. The Permittee shall prevent run-on and run-off from eroding or otherwise damaging the final cover in compliance with UAC R315-8-14.5 (b)(5).
- V.B.5. The Permittee shall monitor the closed facility throughout the post-closure care period in a manner that will ensure detection of a release of hazardous waste, hazardous waste constituents, leachate, contaminated runoff or hazardous waste decomposition products to the soil, ground water, or surface water from the closed facility. The Permittee shall maintain all monitoring equipment throughout the post-closure care period in a manner that will ensure detection of a release from the closed facility, in compliance with UAC R315-8-14.5 (b) and specifications of this permit.
- V.B.6. The Permittee shall maintain the fencing, gates, and warning signs that surround the closed landfill and restrict unauthorized access to the facility.
- V.B.7. The Permittee shall prohibit post-closure use of the property which will disturb the integrity of the final cover, containment systems, or monitoring system in compliance with UAC R315-8-14.5 (b) and Section 2 of Attachment 12.
- V.B.8. The Permittee shall protect and maintain surveyed benchmarks used in complying with UAC R315-8-14.5 (b)(6).

**V.C.      SECURITY**

- V.C.1.      The Permittee shall comply with the following security conditions:
- V.C.1.a.    The fence with locking gates surrounding the closed facility on all sides, which inhibits unauthorized entry, shall be maintained throughout the post-closure care period.
- V.C.1.b.    Signs which read "DANGER, UNAUTHORIZED PERSONNEL KEEP OUT" shall be posted at the entrance gates and every 100 feet along the fence and shall be maintained throughout the post-closure care period. The signs must be legible from a distance of at least 25 feet in compliance with UAC R315-8-2.5 (c).
- V.C.1.c.    All security equipment shall be routinely inspected throughout the post-closure care period.
- V.C.1.d.    Damaged security equipment shall be noted in the inspection checklist and repairs shall begin within 24 hours. Repairs shall be completed as soon as practicable. If the remedy requires more than 72 hours the Permittee shall notify the Executive Secretary, before the expiration of the 72 hour period, of a proposed time schedule for correcting the problem.

**V.D.      INSPECTIONS**

- V.D.1.      The Permittee shall inspect the closed landfill monthly during the post closure care period. The Permittee shall record the results of each inspection on the inspection checklist in Attachment 14. All records of inspections and remedial actions taken to correct problems discovered during the inspections shall be retained in the operating record for at least five years. Any deterioration or malfunction discovered by an inspection will be remedied in compliance with the time frames specified in Condition V.C.1.d.
- V.D.2.      The Permittee shall inspect all groundwater monitoring wells semi-annually and record the results on the inspection checklist found in Attachment 15.
- V.D.3.      The Permittee shall install and maintain, on its premises, equipment appropriate to measure rainfall for the purpose of measuring storm events. The Permittee may, at its option, submit a proposal to use another approved local weather recording station.
- V.D.4.      Upon discovering any deterioration or malfunction that may result in a threat to human health or the environment, the Permittee shall remedy the threat within the time frames specified in Condition V.C.1.d.

**V.E.      DOCUMENTS TO BE MAINTAINED AT FACILITY**

- V.E.1.      The Permittee shall maintain at the UTTR Facility for the duration of the post-closure care period, the following documents and all amendments, revisions, and modifications to these documents:
- V.E.1.a.      The post-closure permit application for the container storage area and landfill;
- V.E.1.b.      The closure plans for the container storage area and landfill;
- V.E.1.c.      Certification of closure for the container storage area and landfill;
- V.E.1.d.      Personnel training documents and records as required by UAC R315-8-2.7 (d) and this permit;
- V.E.1.e.      Completed inspection checklists as required by this permit;
- V.E.1.f.      Post-closure monitoring records, to include groundwater monitoring records, semi-annual groundwater monitoring reports and analytical results, as required by this permit; and,
- V.E.1.g.      The operating record as required by UAC R315-8-5.3 and this permit.

**V.F.      POST-CLOSURE GROUNDWATER MONITORING**

- V.F.1.      The Permittee shall monitor groundwater in the uppermost aquifer, as described in Section 3 of Attachment 11, in a manner that will detect the release of hazardous constituents from the closed landfill in compliance with UAC R315-8-6.
- V.F.2.      The UAC R315-8-6 regulations for Groundwater Protection shall apply to the landfill described in Section 1 of Attachment 11. The waste management area (UAC R315-8-6.6 (b)) is the fenced-in area shown on Figure 3 of Attachment 11. The compliance point, defined per UAC R315-8-6.6 (a) extends through wells H, I, and J-1 as shown on Figure 3 of Attachment 11.
- V.F.3.      Monitoring wells E, F, and G, as shown on Figure 3 of Attachment 11, shall serve as the up-gradient well system.

**V.G.      REQUIRED PROGRAMS**

- V.G.1.      The Permittee shall maintain a detection monitoring program under UAC R315-8-6.9 and Condition V.J.

- V.G.2. The Permittee shall implement a compliance monitoring program under UAC R315-8-6.10. whenever hazardous constituents under UAC R315-8-6.4 are detected at the compliance point.
- V.G.3. The Permittee shall implement a corrective action program under UAC R315-8-6.11. whenever hazardous waste constituents exceed the groundwater protection standard defined in Condition V.H.
- V.G.4. The Permittee shall implement a corrective action program under UAC R315-8-6.11. whenever hazardous constituents under UAC R315-8-6.4 exceed concentration limits under UAC R315-8-6.5.

**V.H. GROUNDWATER PROTECTION STANDARD**

- V.H.1. The Executive Secretary shall establish groundwater protection standards for each hazardous constituent that has entered groundwater at the time the detection monitoring program or other evidence indicates that hazardous constituents have entered groundwater beneath the hazardous waste landfill. The Executive Secretary shall also determine at such time the hazardous constituents to which the protection standard applies as defined in UAC R315-8-6.4, the concentration limits as defined in UAC R315-8-6.5, the point(s) of compliance as defined in UAC R315-8-6.6, and the compliance period as defined in UAC R315-8-6.7.

**V.I. GROUNDWATER MONITORING REQUIREMENTS**

- V.I.1. General Requirements. The groundwater monitoring system shall consist of a sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that:
  - V.I.1.a. Represent the quality of background water that has not been affected by leakage from the landfill, and
  - V.I.1.b. Represent the quality of groundwater passing the point of compliance.
  - V.I.1.c. All monitoring wells shall be constructed in accordance with the provisions in UAC R315-8-6.8 (c) and Condition V.I.2.
  - V.I.1.d. The groundwater monitoring program shall include sampling and analysis procedures consistent with UAC R315-8-6.8 (d) and (e) and Attachment 15.
  - V.I.1.e. The Permittee shall follow the requirements for measurement of the groundwater surface elevation as defined in UAC R315-8-6.8 (f).
  - V.I.1.f. The Permittee shall follow the requirements for establishing background water quality for specified hazardous constituents and monitoring parameters as defined in UAC R315-8-6.8 (g).

- V.I.1.g. The Permittee shall follow the procedures for statistical evaluation in determining whether background values of concentration limits have been exceeded as defined in UAC R315-8-6.8 (h).
- V.I.2. Well Location, Construction and Abandonment.
- V.I.2.a. Well construction shall follow the techniques described in the Technical Enforcement Guidance Document (TEGD), OSWER-9950.1, September 1986. All monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing shall be screened or perforated and packed with sand at the sample depth within the upper aquifer. Above the sampling depth the well bore shall be sealed to prevent contamination of samples and the groundwater.
- V.I.2.b. The Permittee shall construct and maintain new monitoring wells in accordance with plans and specifications to be submitted to the Executive Secretary for approval at the time of permit modification under Condition I.D. The Executive Secretary will approve in writing the following: numbers, construction details, and locations of all new wells prior to installation.
- V.I.2.c. Additional groundwater monitoring wells shall be installed to maintain compliance if subsurface conditions significantly change after permit issuance. Such changes may include but are not limited to, water level elevation or apparent flow direction changes, or detection of organic constituents in a well. The Executive Secretary may require the Permittee to install and sample additional wells at any time during closure or post-closure or compliance periods if new information or unforeseen circumstances reveal a need for additional monitoring to protect human health and the environment.
- V.I.2.d. The Permittee shall submit monitoring well completion reports which include boring logs, sieve analysis (grain size), standard penetration tests, analytical tests performed on soils (Atterberg limits, etc.), water level elevations, water contour maps, including yearly re-surveyed elevations to the exact point of measurement (example: top of PVC cap), well development results including recharge rates, cross sections or Fence diagrams as well as all other data, to be obtained within 90 days after completion of wells which are installed after permit issuance.
- V.I.2.e. The Permittee shall notify the Executive Secretary within 72 hours when a well is no longer properly functioning (including a marked change in pumping rate, presence of sandy or silty materials, and cracked or broken casings) or when the Permittee intends to close one or more wells associated with the landfill. The Executive Secretary shall approve the conditions for replacement or correction of improperly operating wells.
- V.I.2.f. The Permittee shall determine the depth to the bottom of a groundwater monitoring wells any time a pump is removed for maintenance. This information shall be

recorded on well purging volume calculation sheets as required. If a problem is observed, the Permittee shall follow the procedures described above in Condition V.I.2.e. regarding notification and corrective procedures.

V.I.2.g. Abandonment of any monitoring well shall be accomplished in a manner that prevents vertical movement of water and possible contaminants within the borehole and annular space surrounding the well casing. The Permittee shall comply also with Utah Division of Water Rights rules for well abandonment.

V.I.3. Sampling and Analysis Procedures

V.I.3.a. The Permittee shall maintain consistent sampling and analysis procedures in the groundwater monitoring program that are designed to ensure reliable monitoring results of groundwater quality below a waste management area. At a minimum, the program shall include procedures and techniques for:

V.I.3.a.i. Sample collection;

V.I.3.a.ii. Sample preservation and shipment;

V.I.3.a.iii. Analytical procedures;

V.I.3.a.iv. Chain-of-custody control and

V.I.3.a.v. Quality assurance and control.

V.I.3.b. The sampling and analytical methods shall be appropriate for groundwater sampling and accurately measure hazardous constituents in groundwater samples.

V.I.3.c. The Permittee shall use the following techniques and procedures when obtaining samples and analyzing samples from the groundwater monitoring wells:

V.I.3.c.i. Samples shall be collected by the technique in Attachment 15 and as required by UAC R315-8-6.8 (e).

V.I.3.c.ii. Samples shall be preserved and transported in accordance with the procedures in Attachment 15.

V.I.3.c.iii. Samples shall be analyzed using SW-846 Methods 608, 624, 625, 8140, and 8150 and the procedures specified in Attachment 15. All major peaks greater than 25% of the peak height of the closest internal standard will be identified using the latest NBS Library. The quantity of these compounds will be estimated based upon the closest internal standard. Any major peak found during the analysis may become a target parameter.

- V.I.3.c.iv. The Permittee shall provide at least one field, one set of replicates representing 10% of the total number of samples, three laboratory blanks and one trip blank for analysis at each semi-annual sampling interval under the detection monitoring program. Any field, trip, or laboratory blanks exceeding the method detection limit for any organic parameter may result in rejection of the data for that parameter. This may require re-sampling of all wells sampled during that particular sampling event, for the specified compounds. Qualifiers shall be indicated on all organic laboratory reports when blanks indicate contamination above the method detection level.
- V.I.3.c.v. Samples shall be tracked and controlled using the chain-of-custody procedures in Attachment 15.
- V.I.3.c.vi. In the case of sample breakage (i.e. during shipping, etc.), re-sampling shall be done within seven working days of the facility being notified of such an event.
- V.I.3.d. The Executive Secretary may request at any time all laboratory QA/QC documentation and supporting data on any sampling event. The Permittee shall retain either at the laboratory or at the facility, the raw organic data for required sampling and analysis, including gas chromatographic printouts, mass spectral analyses, QA/QC surrogate and spiking results, etc. These data shall be retained for a period of not less than three years at the laboratory or the facility.
- V.I.3.e. A tentative value is defined as any measured concentration for an analyte less than the method detection limit (MDL), but otherwise meeting criteria for identification using GC/MS techniques. These values shall be reported to the Executive Secretary as values identified by the letter J, but shall not be used as indications of detection.
- V.I.3.f. A reportable value is defined as any measured concentration for an analyte in Attachment 15 which equals or exceeds the method detection limit identified in SW-846.
- V.I.4. Groundwater Elevation
  - V.I.4.a. The Permittee shall determine the groundwater surface elevation in all monitoring wells on a semi-annual basis. This data shall be submitted to the Executive Secretary in tabular form and on a contour map as part of each semi-annual groundwater monitoring report.
  - V.I.4.b. The Permittee shall determine the groundwater flow rate and direction in the uppermost aquifer yearly. This information shall be submitted to the Executive Secretary as part of the first semi-annual groundwater monitoring report of each year. This report shall be submitted no later than March 31st of each year.
- V.I.5. Background Water Quality and Monitoring Parameters
  - V.I.5.a. For purposes of the detection monitoring program as specified in Condition V.J. there shall be two classes of parameters for measurement and analysis:

- V.I.5.a.i. Class 1 - The first class consists of a set of organic hazardous constituents or indicator parameters, measurable by gas chromatography/mass spectrometry (GC/MS) , and are listed in Attachment 15. They shall be identified as "Detection Monitoring Parameters." These compounds are a subset of UAC R315-50-10.
- V.I.5.a.ii. Class 2 - A second list of parameters, to be monitored, is identified as *Groundwater Quality Parameters*. They are listed in Attachment 15.
- V.I.5.a.iii. The Class 1 Detection Monitoring Parameters shall be used as the principal indicators of groundwater contamination. Class 2 parameters shall be measured at each required detection monitoring sampling event to provide additional information regarding metallic hazardous constituent concentrations and other evidence of possible groundwater contamination.

V.I.6. New Wells

- V.I.6.a. All monitoring wells constructed and installed after the issuance of this permit, shall be immediately sampled for Class 1 and Class 2 parameters. Sampling of the new well(s) shall continue quarterly for one year for all Class 1 and Class 2 parameters.

**V.J. DETECTION MONITORING PROGRAM**

V.J.1. Detection Monitoring Parameters (Class 1)

- V.J.1.a. The Permittee shall sample semi-annually all monitoring wells for Class 1 parameters, listed in Attachment 15. Results from at least one set of replicates, one field blank, one trip blank, and three laboratory blanks shall be reported semi-annually. All dilutions made shall be specified on laboratory reports.
- V.J.1.b. The Permittee shall provide the Executive Secretary, within 60 days after receiving the sampling data from the laboratory, a groundwater sampling report. This report shall include a list of parameters analyzed, reportable and tentative values for each parameter and method detection limits for each compound.
- V.J.1.c. For any well where one or more Class 1 parameters are found at or above the method detection limit, the well shall be re-sampled within 30 days of notification by the Permittee to the Executive Secretary, unless the Executive Secretary has determined that resampling is not necessary. The Permittee may choose to resample immediately upon receipt of the initial data result. Re-sampling need only take place for those parameters and at those wells where exceedances of the method detection limits are indicated.
- V.J.1.d. Once the report identified in Condition V.J.1.b. has been submitted to the Executive Secretary, the Permittee may continue to develop evidence which could indicate a source of contamination other than the landfill. If the report indicates exceedances



of the method detection limit for at least one parameter in a well, the well shall be subject to compliance monitoring as described in Condition V.K.

V.J.2. Background Quality Parameters (Class 2)

- V.J.2.a. The Permittee shall sample semi-annually all monitoring wells for Class 2 parameters, listed in Attachment 15. Results from at least one set of replicates, one field blank, one trip blank, and three laboratory blanks shall be reported semi-annually. All dilutions made shall be specified on laboratory reports.
- V.J.2.b. The Permittee shall provide the Executive Secretary, within 60 days after receiving the sampling data from the laboratory, a groundwater sampling report. This report shall include a list of parameters analyzed, reportable and tentative values for each parameter and method detection limits for each compound.
- V.J.2.c. The Permittee shall evaluate the data in accordance with UAC R315-8-6.8 (h). If the evaluation indicates a statistically significant difference from background, using this procedure, the Permittee shall notify the Executive Secretary as prescribed by UAC R315-8-6.9 (g).
- V.J.2.d. For any well where one or more Class 2 parameters are found to be statistically different from background, the well shall be resampled within 30 days of notification by the Permittee to the Executive Secretary, unless the Executive Secretary has determined that resampling is not necessary. The Permittee may choose to resample immediately upon receipt of the initial data result. Resampling need only take place for those parameters and at those wells where a statistical difference was observed.
- V.J.2.e. Once the groundwater sampling report identified in Condition V.J.2.b. has been submitted to the Executive Secretary, the Permittee may continue to develop evidence which could indicate a source of contamination other than the landfill. If the report indicates a statistically significant difference from background for at least one parameter in a well, the well shall be subject to compliance monitoring as described in Condition V.K.

V.J.3. Quality Assurance / Quality Control Information.

The Permittee shall include all quality assurance and quality control data, specified in Attachment 15, with each submittal of groundwater monitoring data.

**V.K. COMPLIANCE MONITORING REQUIREMENTS**

- V.K.1. Within 90 days of determination by the Executive Secretary that compliance monitoring is required for one or more wells, the Permittee shall modify the permit to establish a compliance monitoring program to meet the requirements of UAC R315 8-6.10. The modification request shall include the following information:

- V.K.1.a. A list of additional UAC R315-50-10 constituents to be sampled for at each monitoring well subject to compliance monitoring;
- V.K.1.b. Any proposed changes to the groundwater monitoring system at the landfill necessary to meet the requirements of UAC R315-8-6.10;
- V.K.1.c. Any proposed changes to the monitoring frequency, sampling and analysis procedures necessary to meet the requirements of UAC R315-8-6.10 and,
- V.K.1.d. For each hazardous constituent found at the compliance point, a proposed clean-up level or a notice of intent to file for alternate concentration limits under UAC R315-8-6.5 (b).
- V.K.2. The Permittee is not relieved of the burden of submitting a permit modification under Condition V.K.1. unless it can successfully demonstrate that a source other than the landfill triggered the compliance monitoring requirement. In making a demonstration, the Permittee shall comply with UAC R315-8-6.10 (i).
- V.K.3. Within 180 days of determination by the Executive Secretary that compliance monitoring is necessary for one or more wells, the Permittee shall submit all data necessary to justify any proposed clean-up level or alternate concentration limit sought under UAC R315-8-6.5 (b) and an engineering feasibility plan for a corrective action program necessary to meet the requirements of UAC R315-8-6.11 unless:
  - V.K.3.a. Hazardous organic constituents identified in Table 1 of UAC R315-8-6.5 and their concentrations do not exceed the respective values given in that Table or,
  - V.K.3.b. The Permittee has sought and received an alternate concentration limit under UAC R315-8-6 (b).
- V.K.4. The Permittee shall assure that monitoring and corrective action measures necessary to achieve compliance with the groundwater protection standard under UAC R315-8-6.3 and Condition V.H. of this module are performed during the Executive Secretary's review and approval of the permit modification request identified in Condition V.K.1.